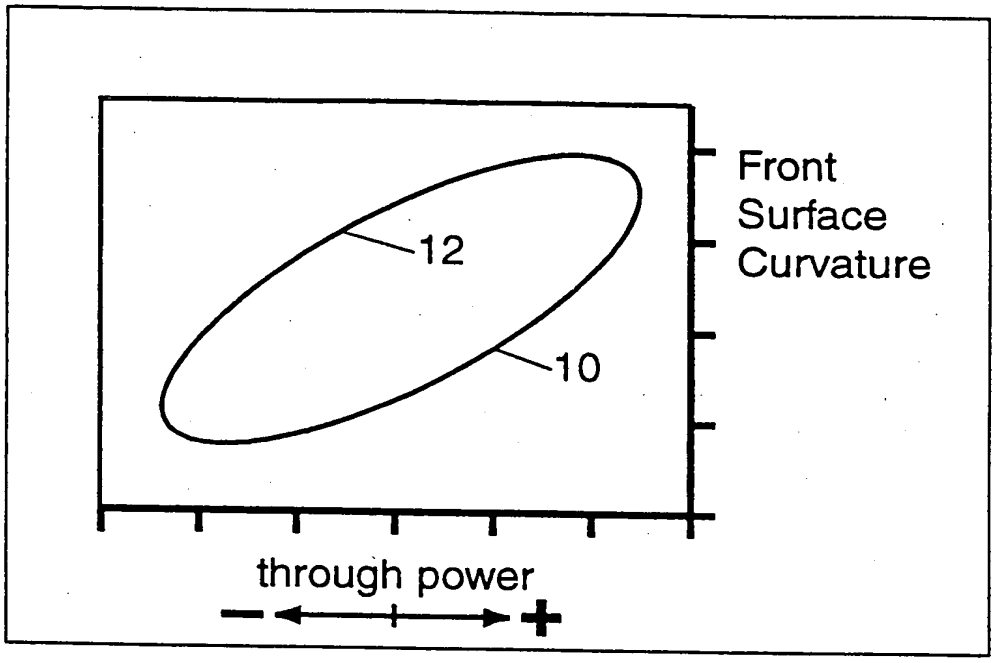
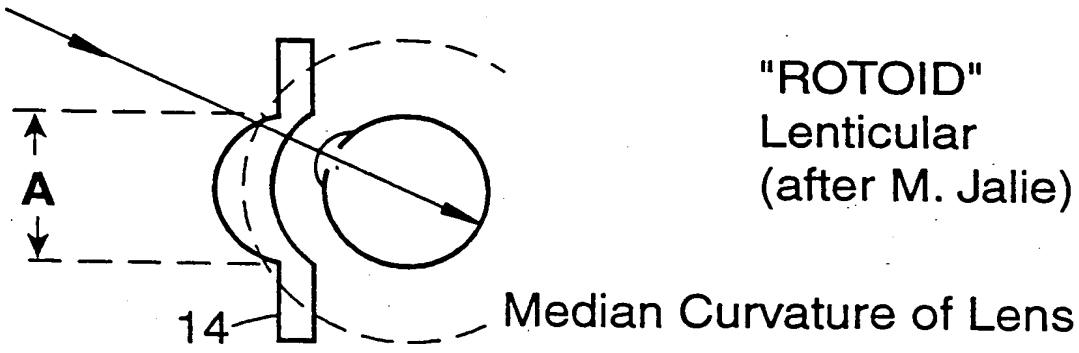
**FIGURE 1**




A "Tscherning" ellipse

**FIGURE 2**




PRIOR ART

FIGURE 3

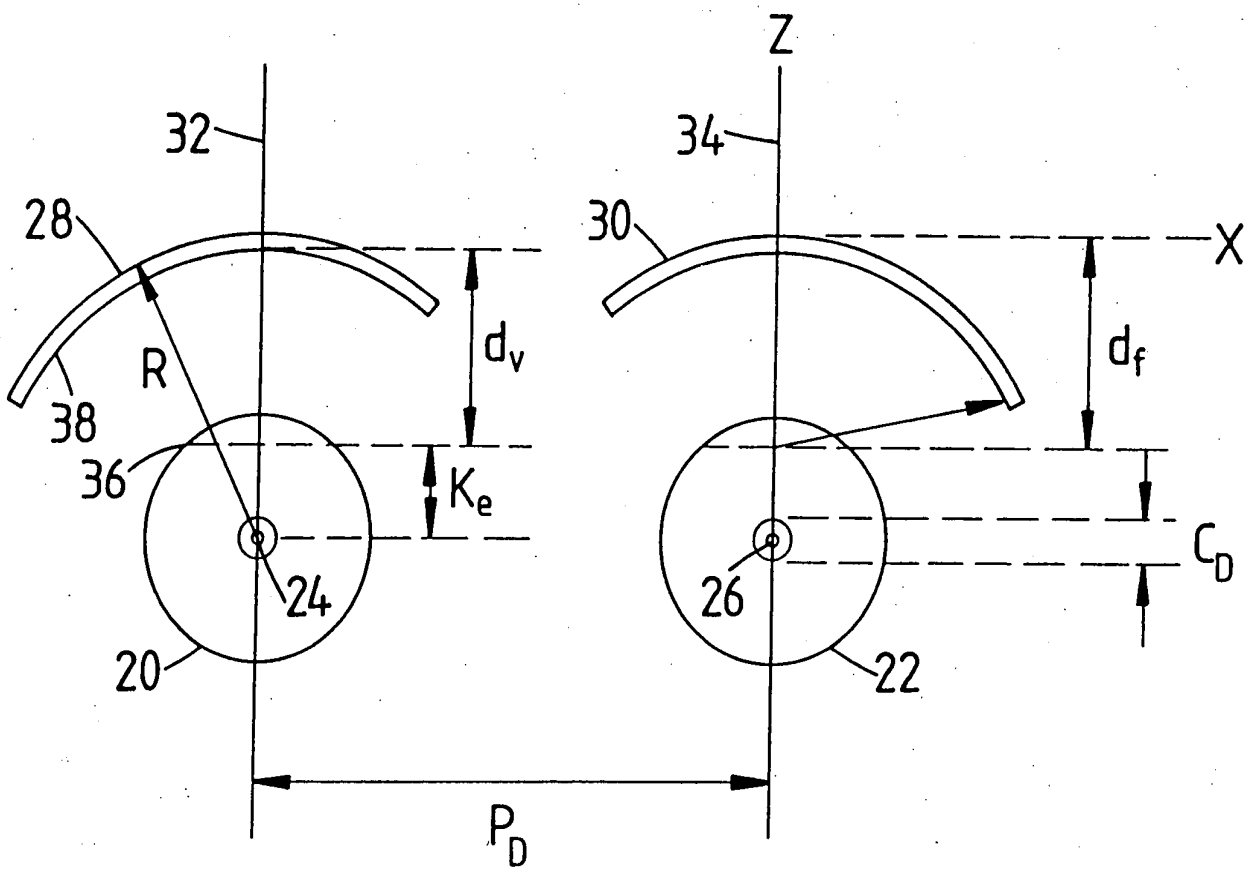


**FIGURE 4**

Morris - Spratt Diagram

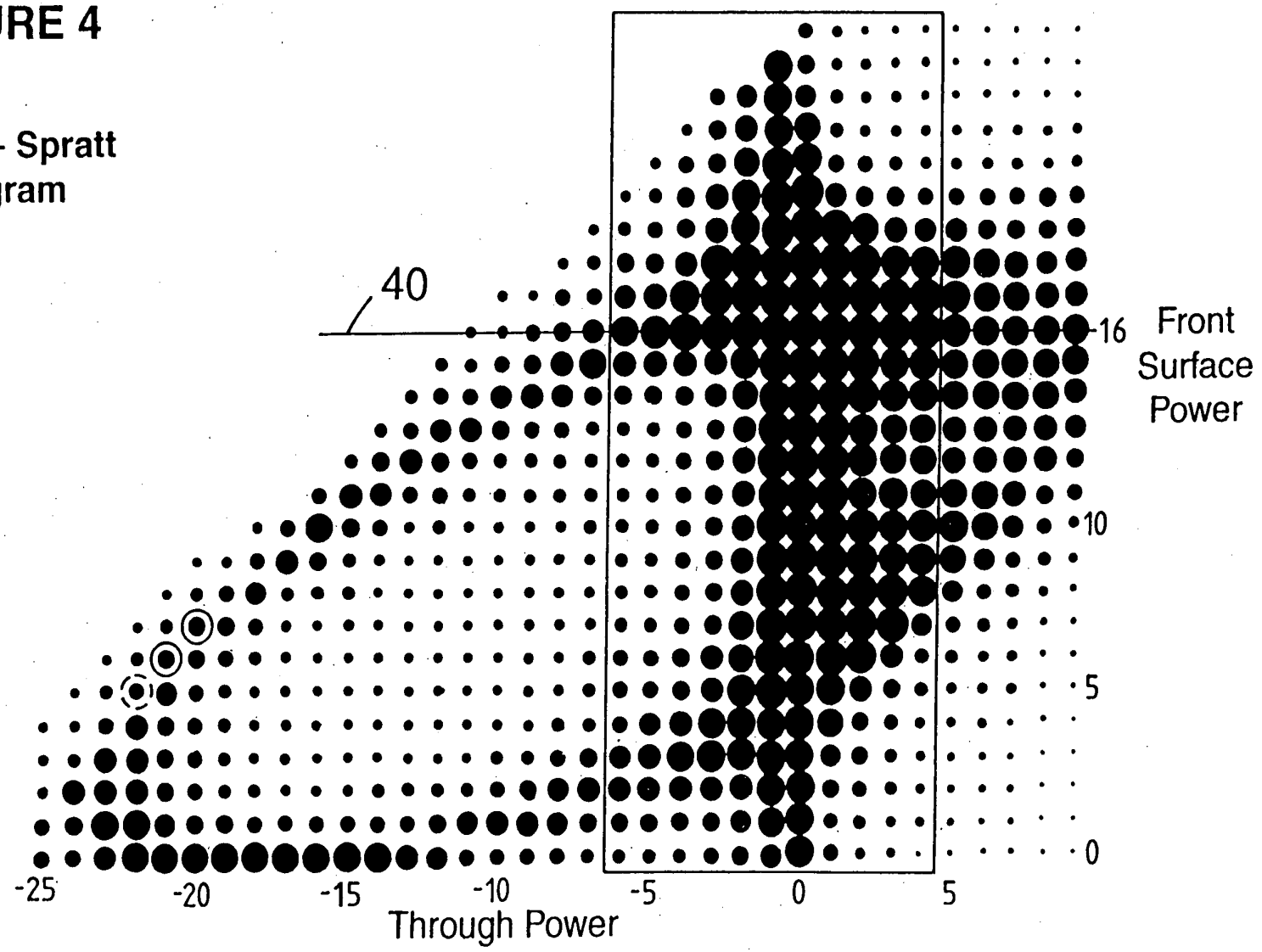


**FIGURE 5**

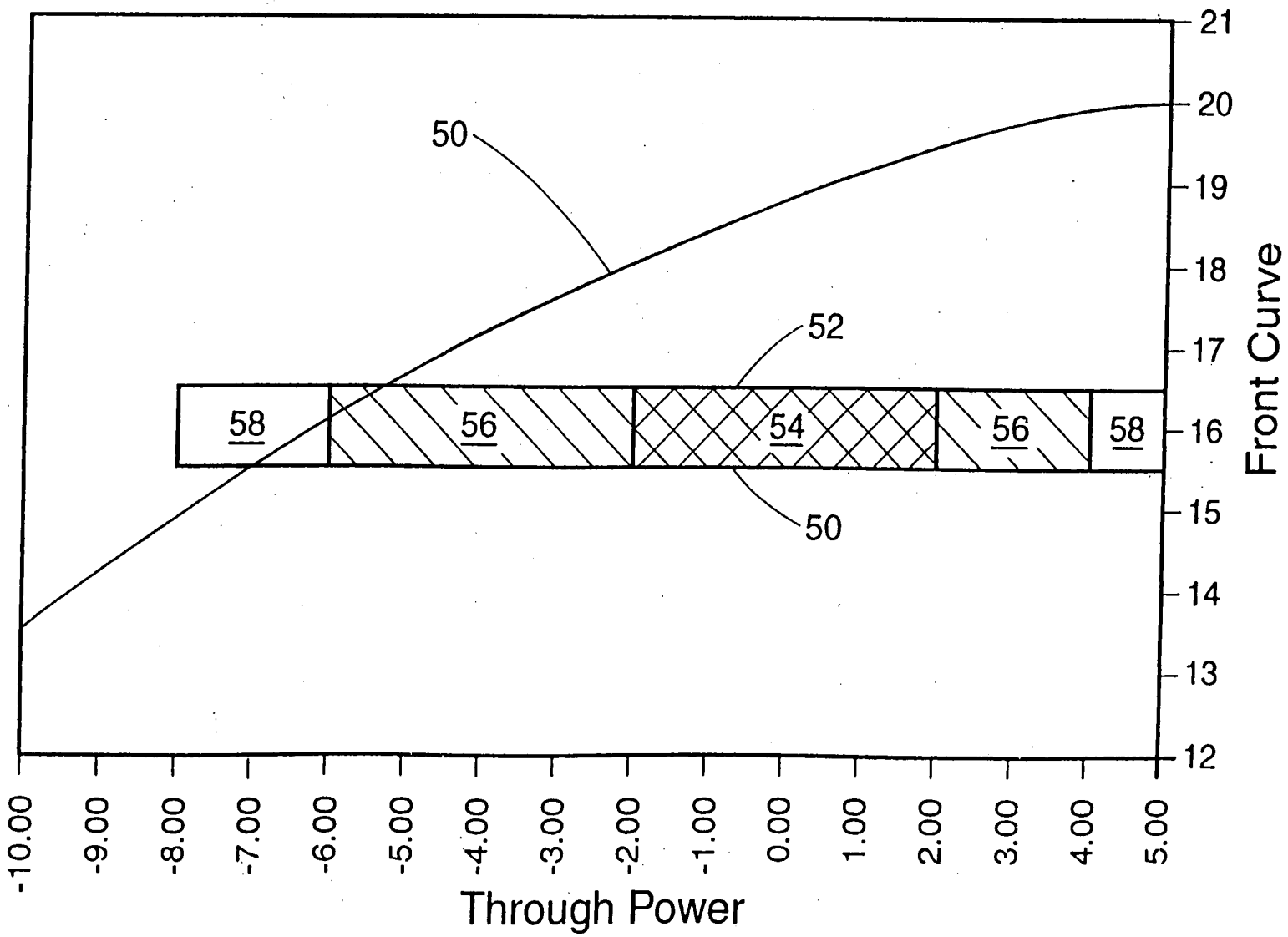

21
20
19
18
17
16
15
14
13
12
Front Curve
50
52
58
56
54
56
58
50
-10.00
-9.00
-8.00
-7.00
-6.00
-5.00
-4.00
-3.00
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
5.00
Through Power

**FIGURE 6 (a)**

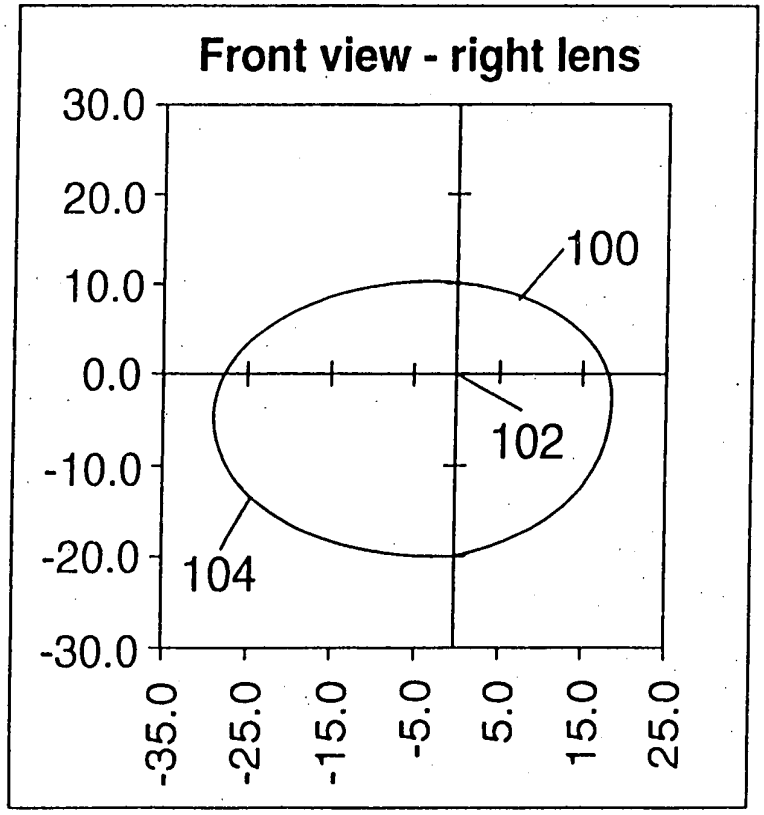



**FIGURE 6 (b)**

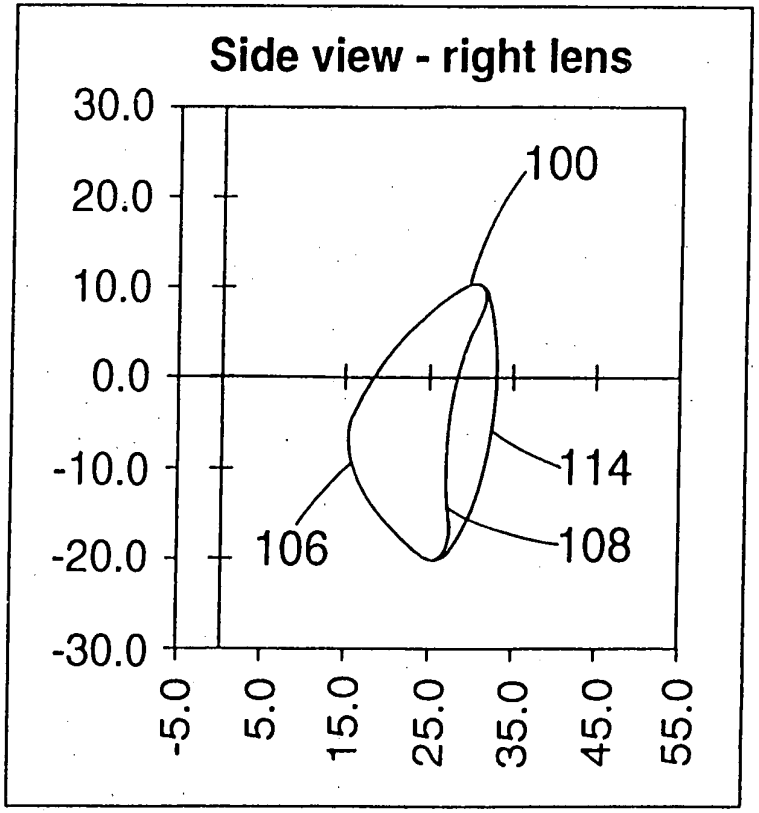


**FIGURE 6 (c)**

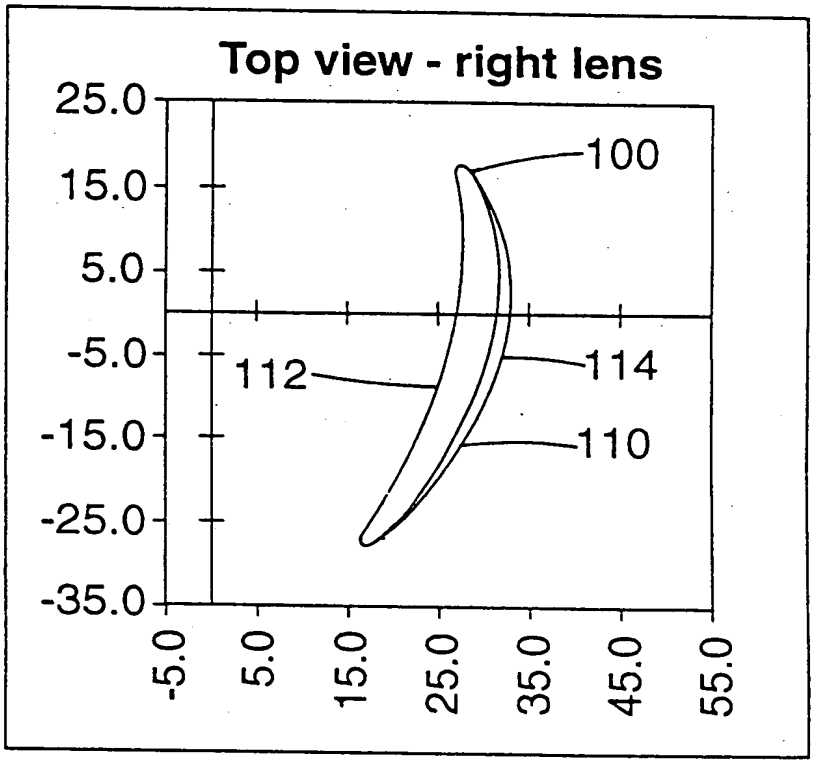

Top view - right lens
25.0
15.0
5.0
-5.0
-15.0
-25.0
-35.0
-5.0
5.0
15.0
25.0
35.0
45.0
55.0
100
112
114
110

FIGURE 7

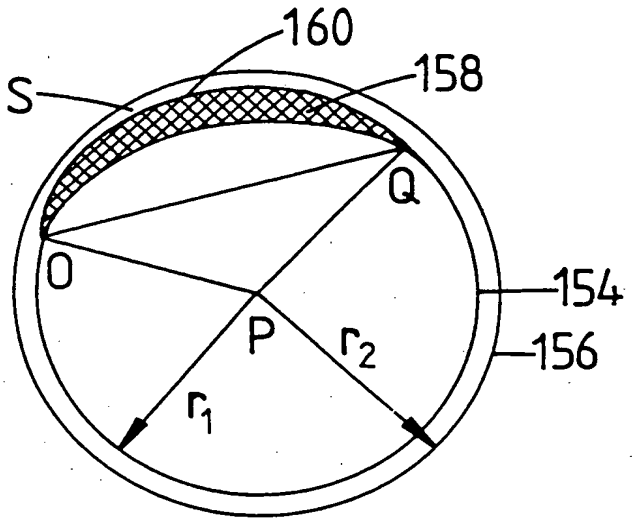



FIGURE 8

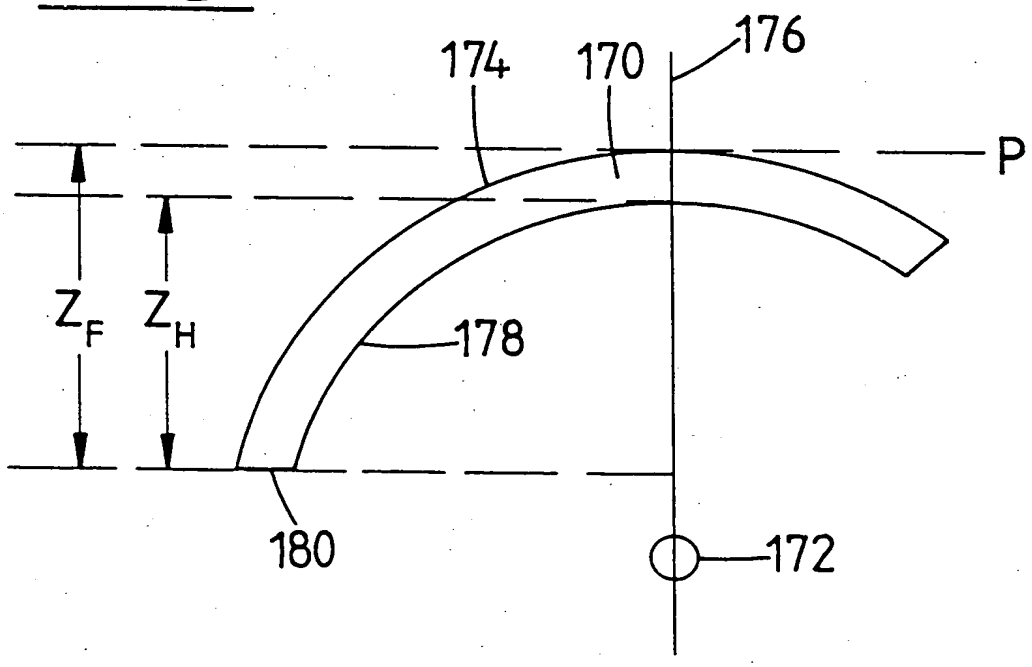


**FIGURE 9**

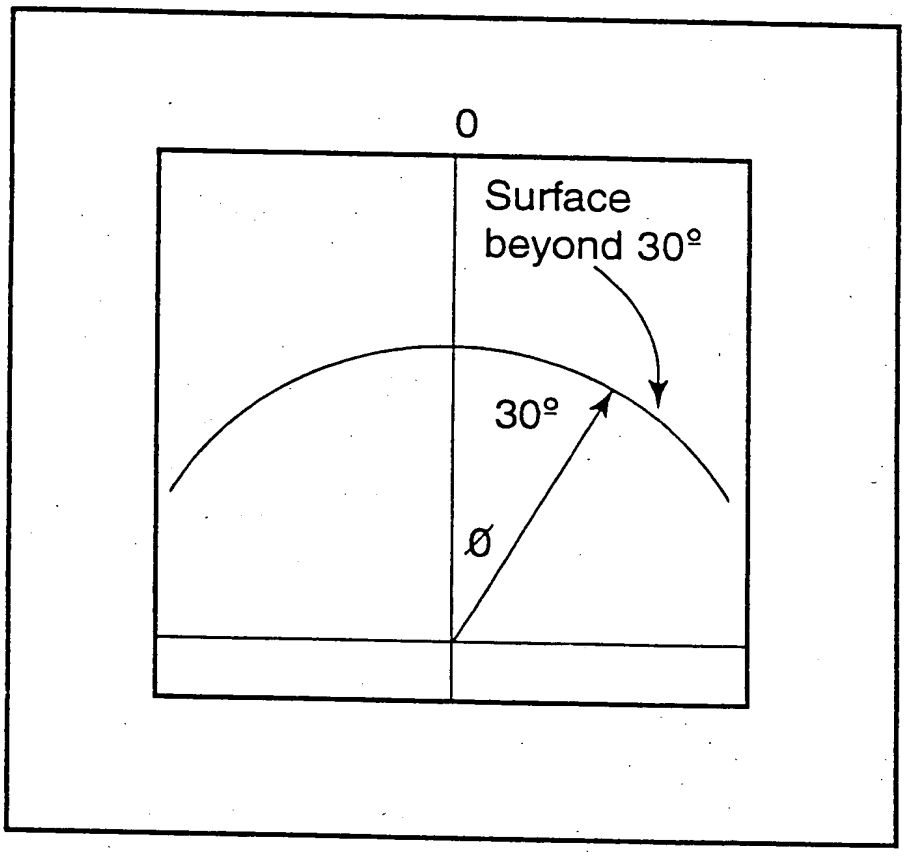


**FIGURE 10**

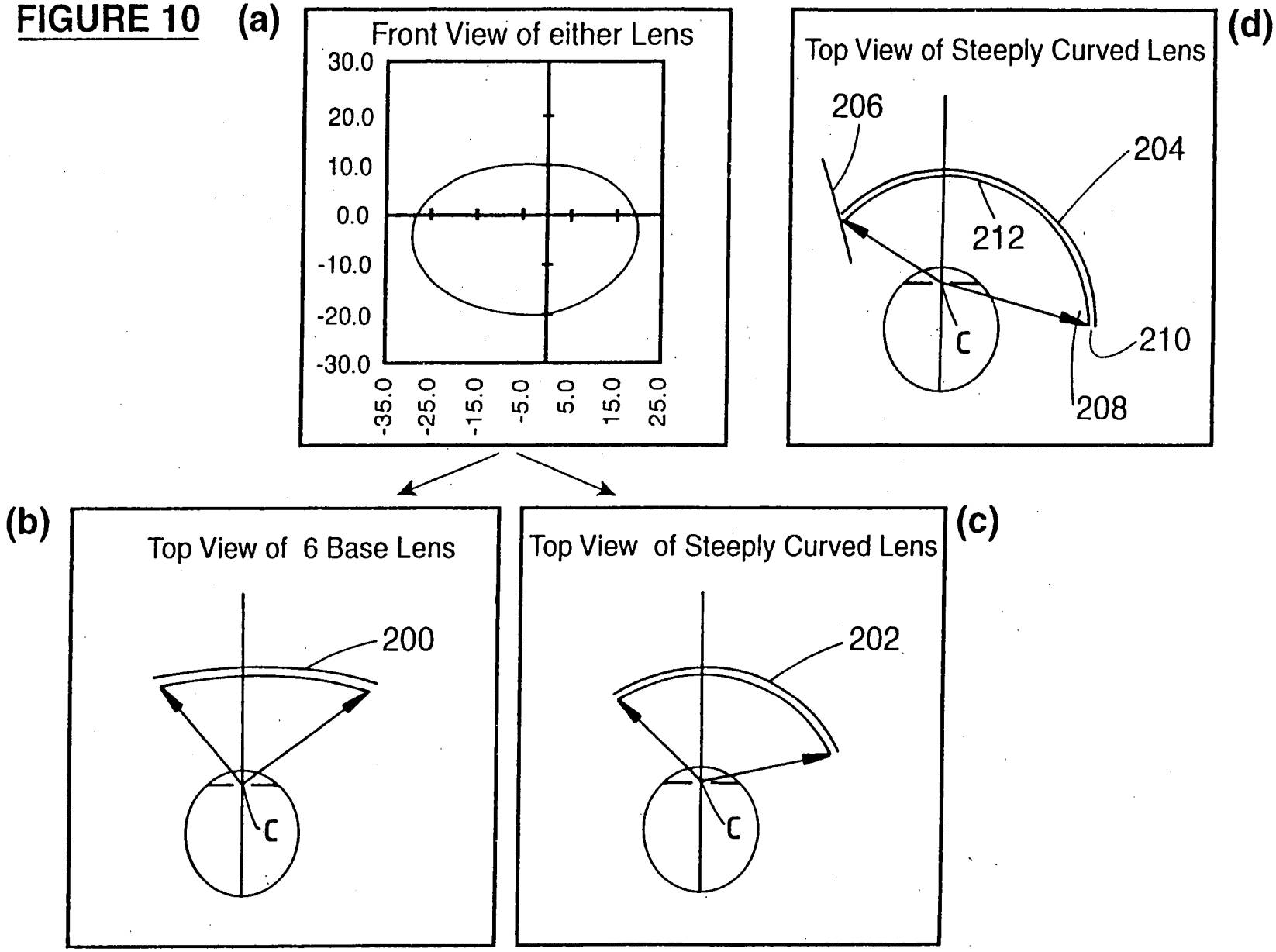
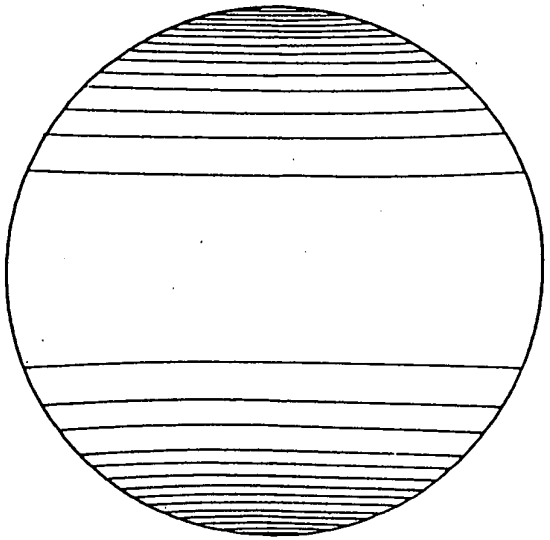

(a)
Front View of either Lens
30.0
20.0
10.0
0.0
-10.0
-20.0
-30.0
-35.0
-25.0
-15.0
-5.0
5.0
15.0
25.0
(d)
Top View of Steeply Curved Lens
206
204
212
210
208
C
(b)
Top View of 6 Base Lens
200
C
(c)
Top View of Steeply Curved Lens
202
C

FIGURE 11(a)

surface astigmatism

FIGURE 11(b)

donut



barrel

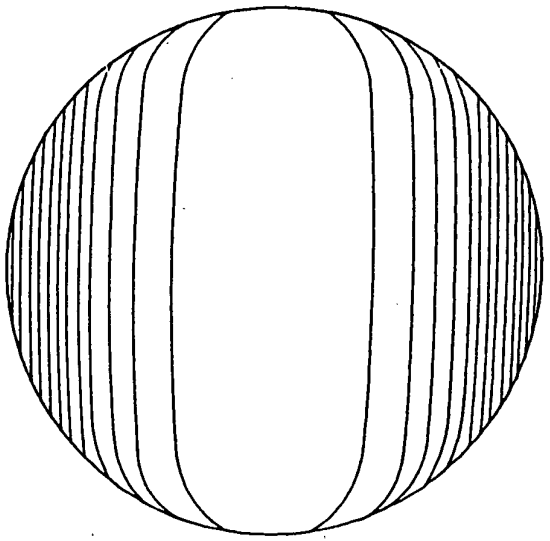
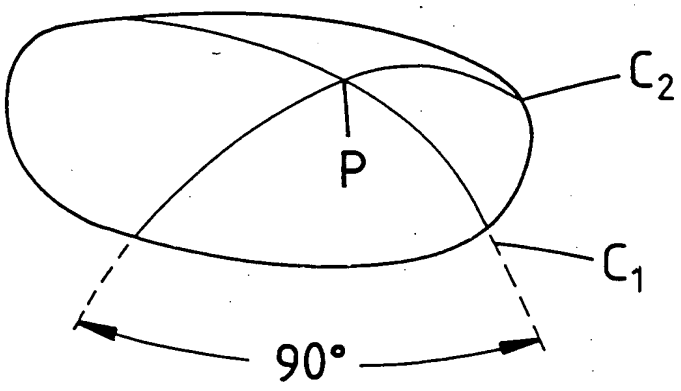


FIGURE 11(c)



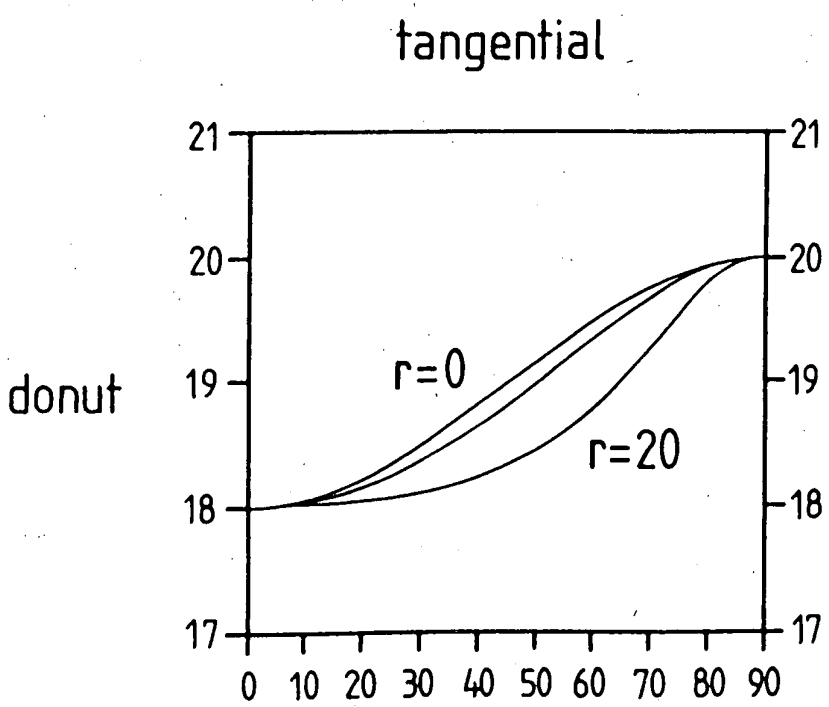



FIGURE 12(a)

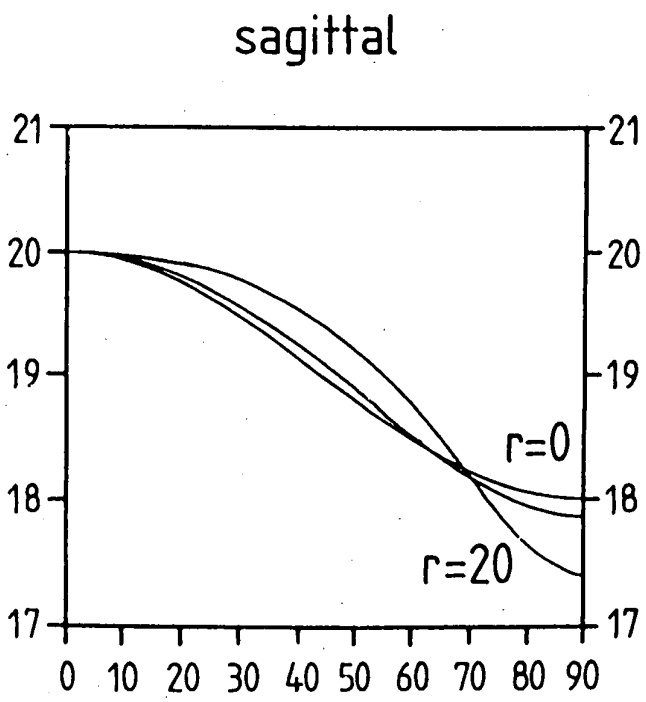



FIGURE 12(b)

tangential

barrel

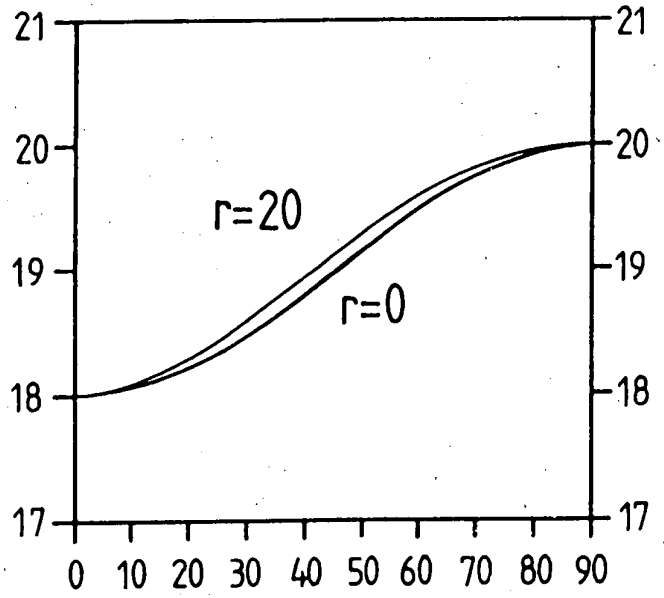



FIGURE 12(c)

sagittal

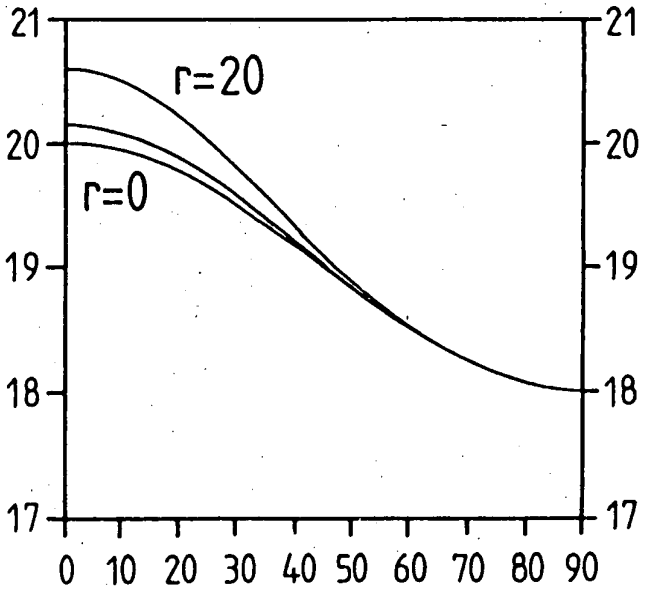



FIGURE 12(d)

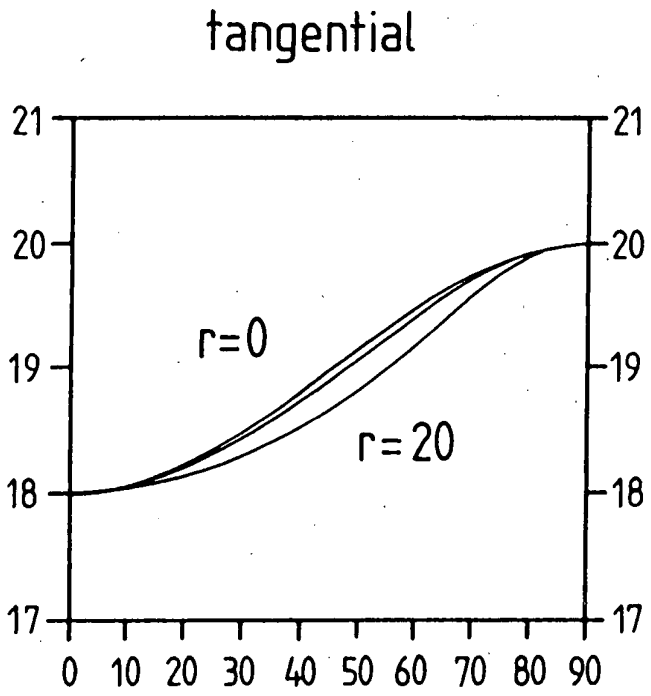



FIGURE 13(a)

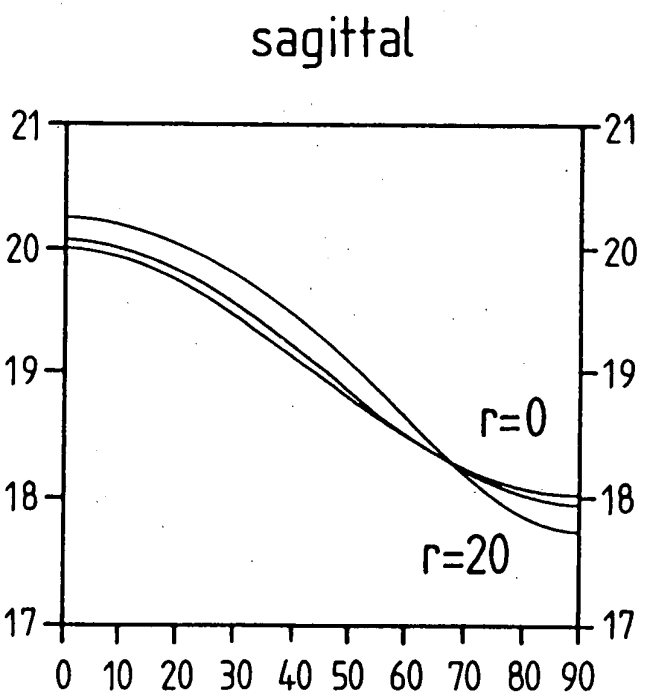



FIGURE 13(b)

tangential

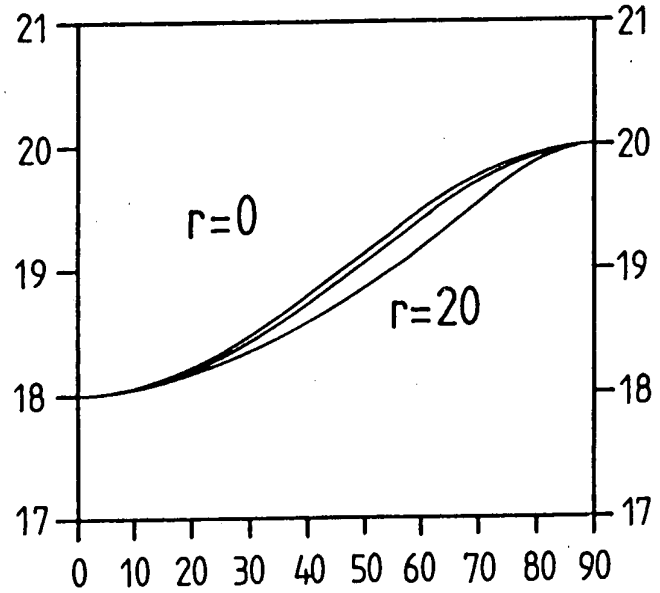



FIGURE 14(a)

sagittal

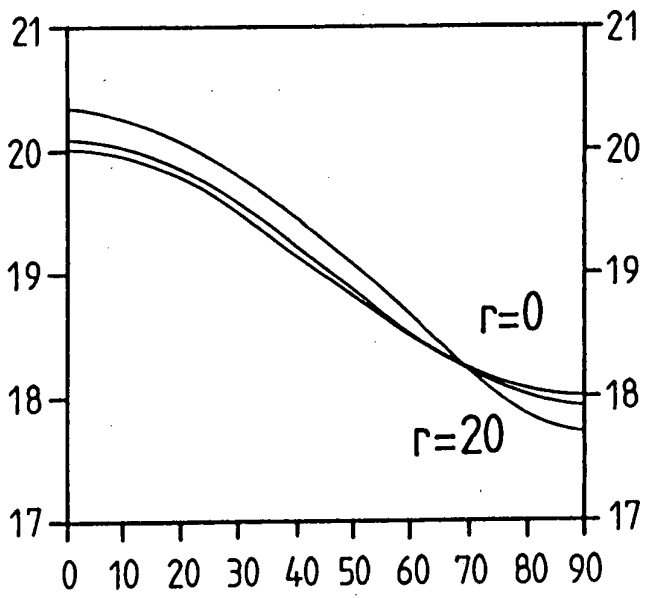
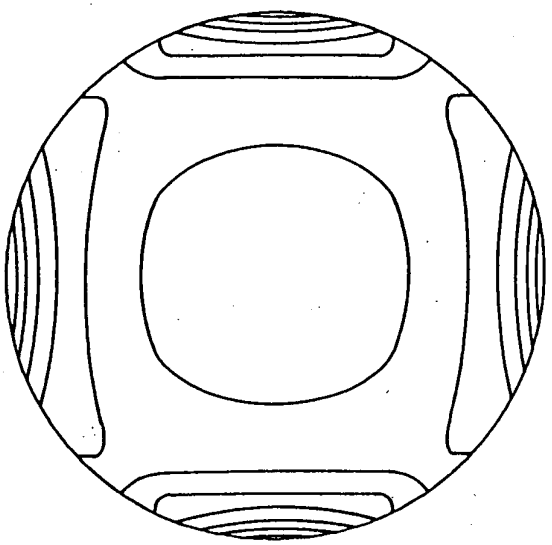



FIGURE 14(b)

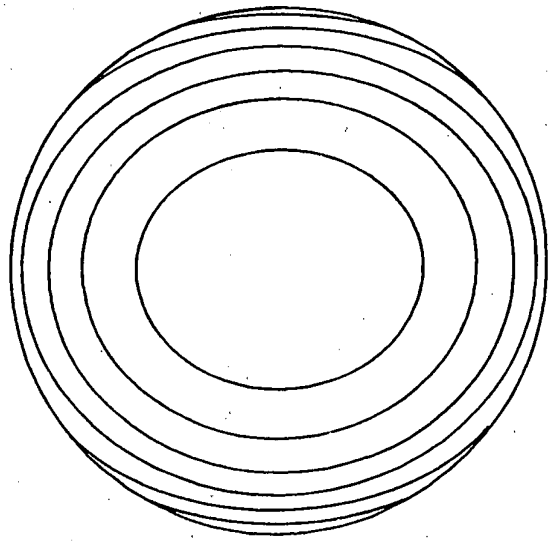
**FIGURE 15**

surface astigmatism

averaged torics



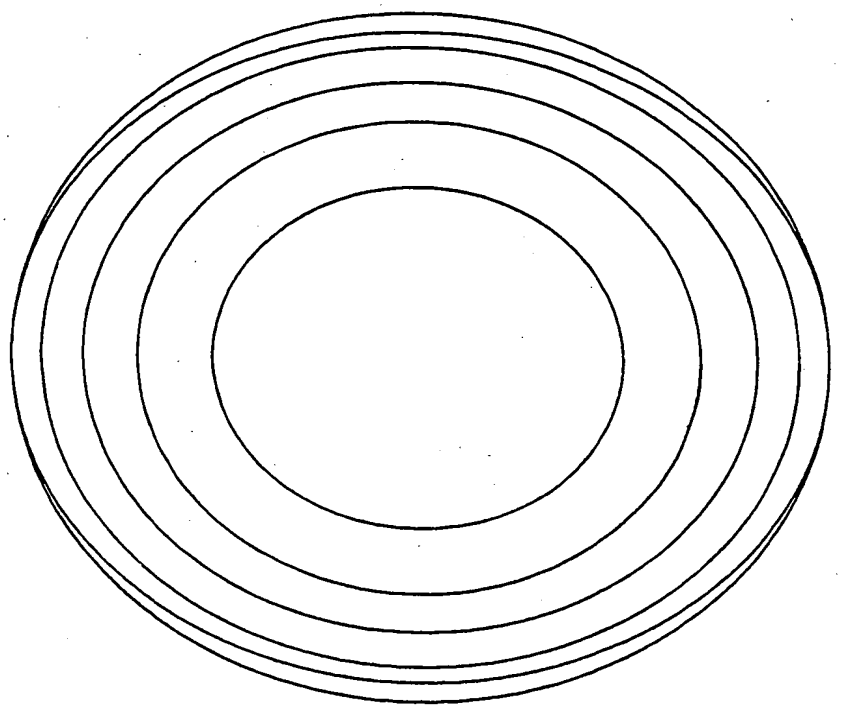
circular meridians



# FIGURE 16

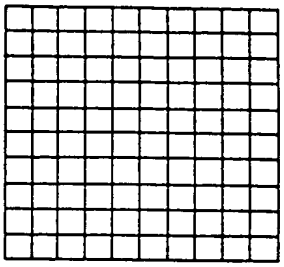
surface astigmatism

circular meridians
one extra coef.



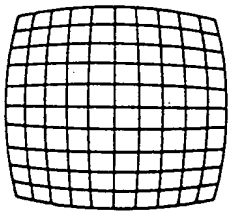
## FIGURE 17 (a)

Object Grid



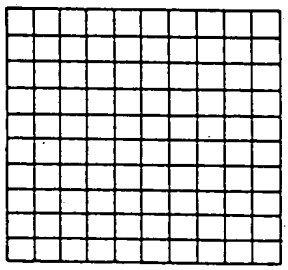
## FIGURE 17 (b)

Image through -5.00 Conventional lens



## FIGURE 17 (c)

Image through -5.00 Distortion Corrected Lens



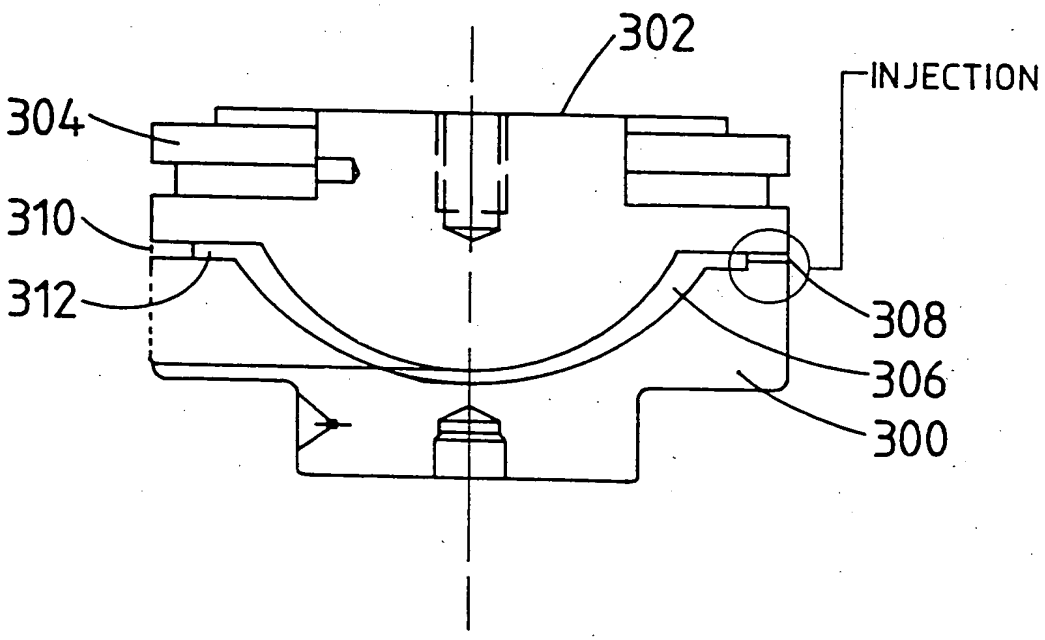
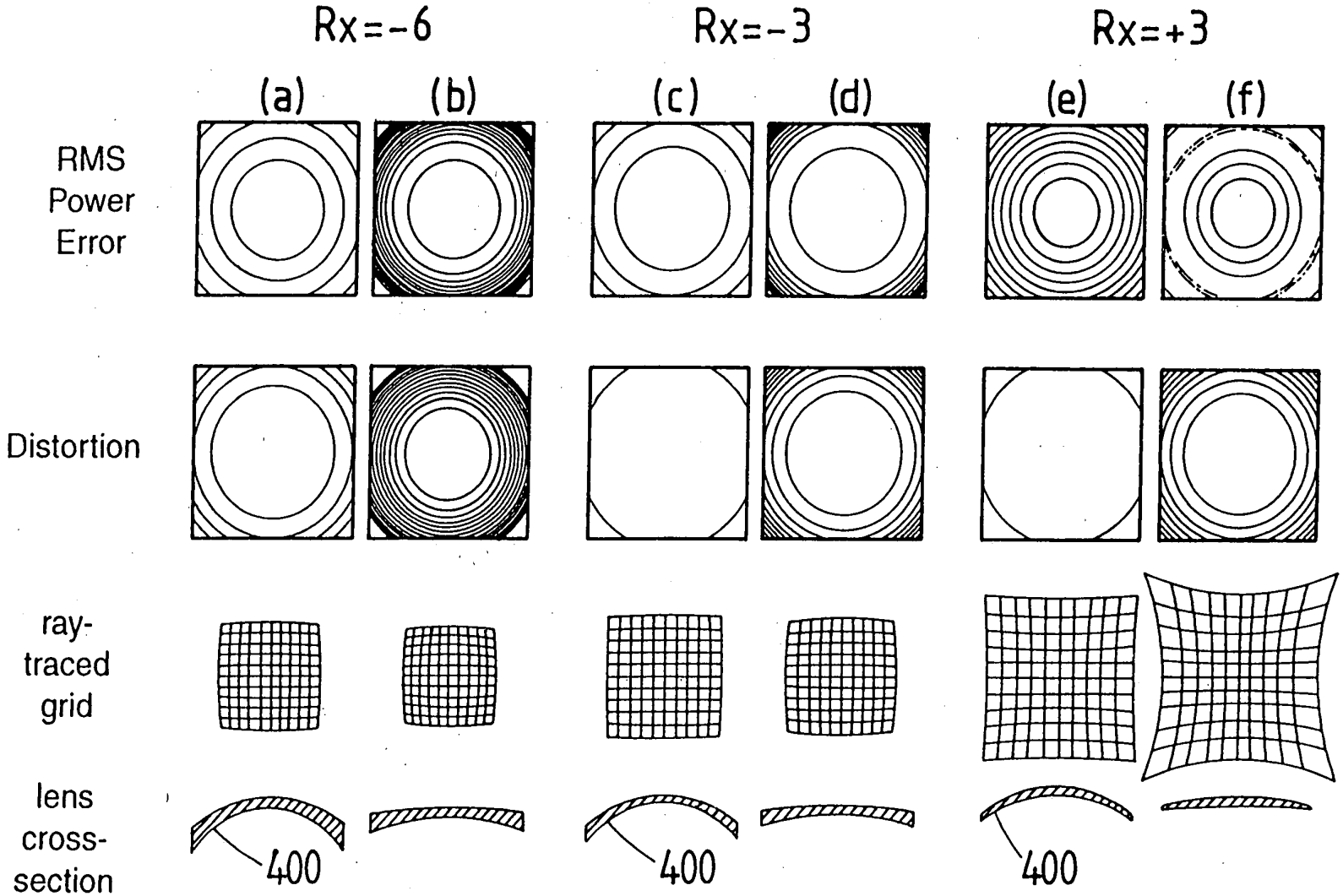
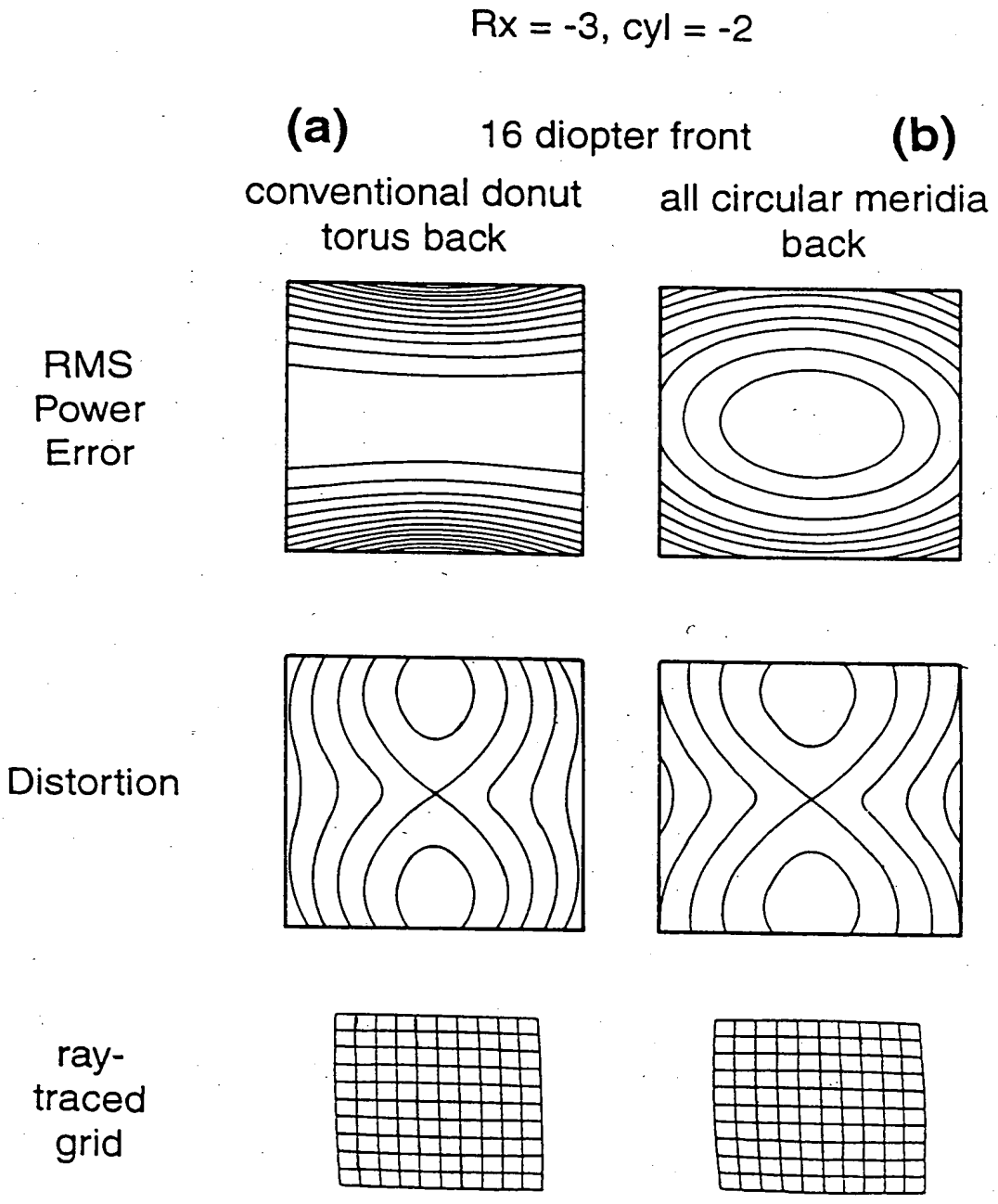



FIGURE 18

**FIGURE 19**


Rx=-6
Rx=-3
Rx=+3
(a)
(b)
(c)
(d)
(e)
(f)
RMS Power Error
Distortion
ray-traced grid
lens cross-section
400
400
400

# FIGURE 20

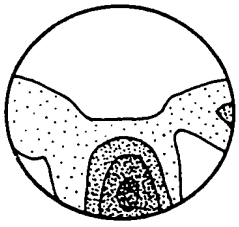

Rx = -3, cyl = -2
(a)
16 diopter front
(b)
conventional donut torus back
all circular meridia back
RMS Power Error
Distortion
ray-traced grid

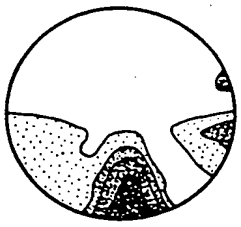
XL Progressive
Rx=+2.00 D
Distance Vision

6 Base

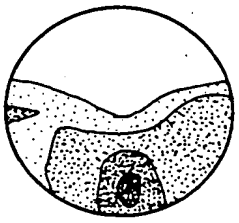
Concentric
Spherical Back

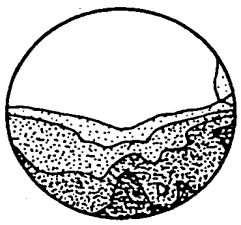
Mean Power
Error



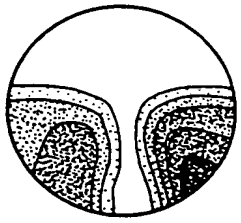


RMS Power
Error





Astigmatism



Lens Form

Lens Data

Progressive Front
Spherical back
Front=6.00 D @ 1:530
Rx=2.00 D
Index=Poly

Progressive Front
Spherical back
Front=16.0 D @1.530
Rx=2.00 D
Index=Poly

FIGURE 21

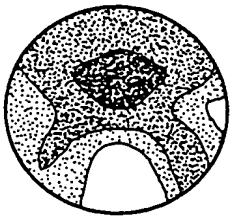
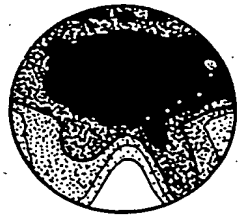
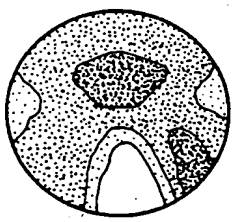
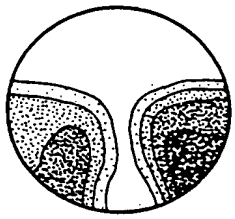
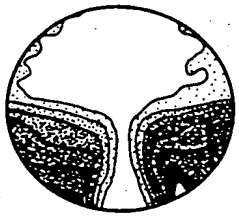
| XL Progressive<br>Rx=+2.00 D<br>Near Vision | 6 Base | Concentric<br>Spherical Back |
|---|---|---|
| Mean Power Error |  |  |
| RMS Power Error |  |  |
| Astigmatism |  |  |
| Lens Form |  |  |
| Lens Data | Progressive Front<br>Spherical back<br>Front=6.00D @ 1.530<br>Rx=2.00D<br>Index = Poly | Progressive Front<br>Spherical back<br>Front=16.0D @ 1.530<br>Rx=2.00D<br>Index = Poly |

FIGURE 22

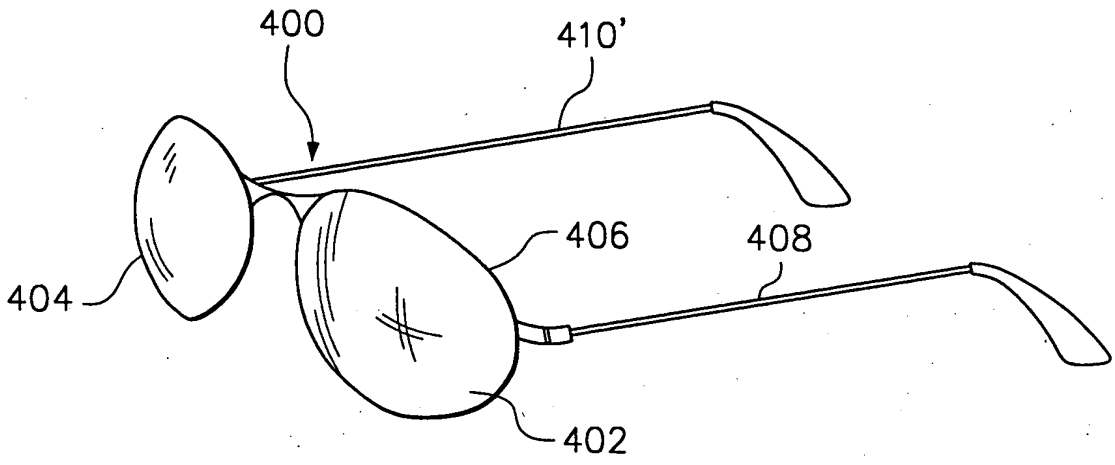



FIGURE 23

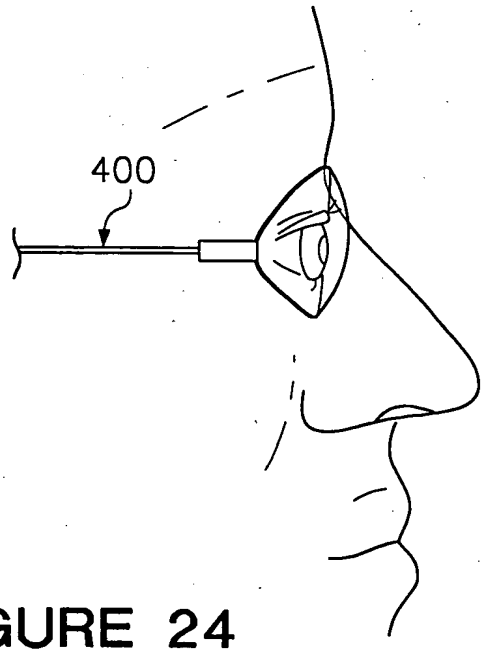



FIGURE 24

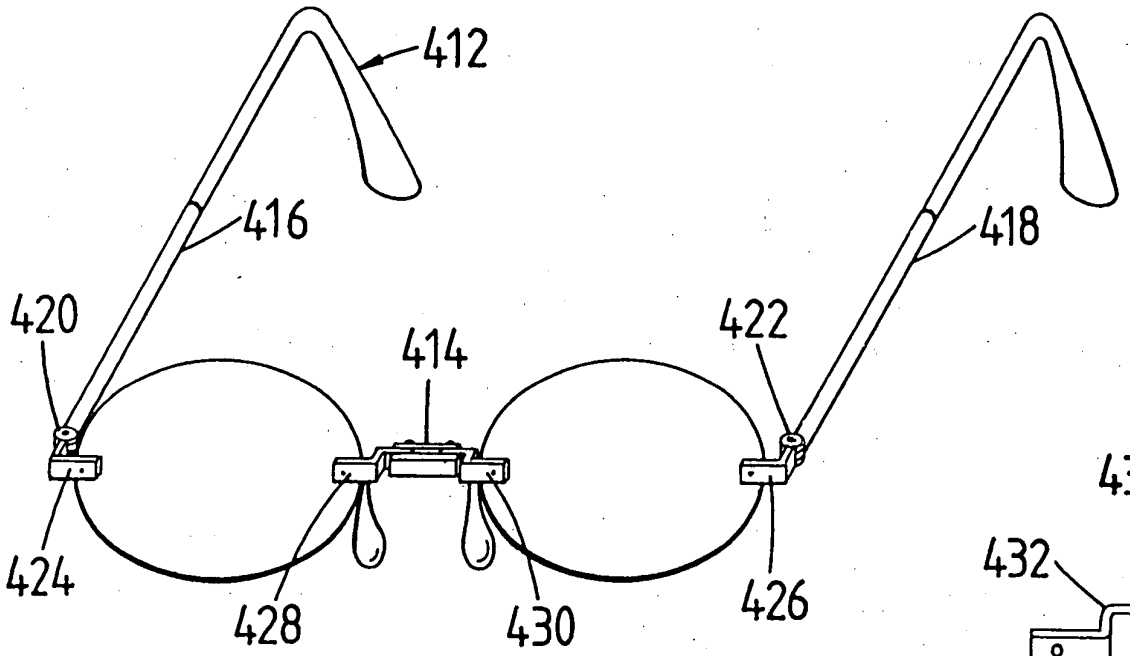



FIGURE 25

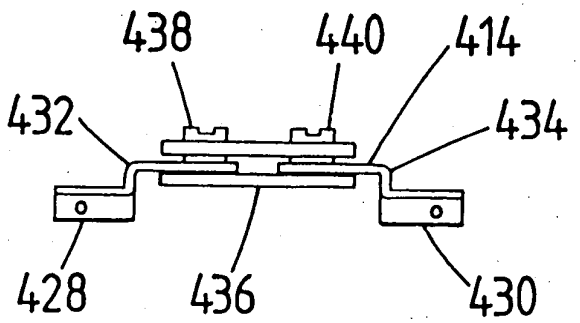



FIGURE 25(a)

FIGURE 26

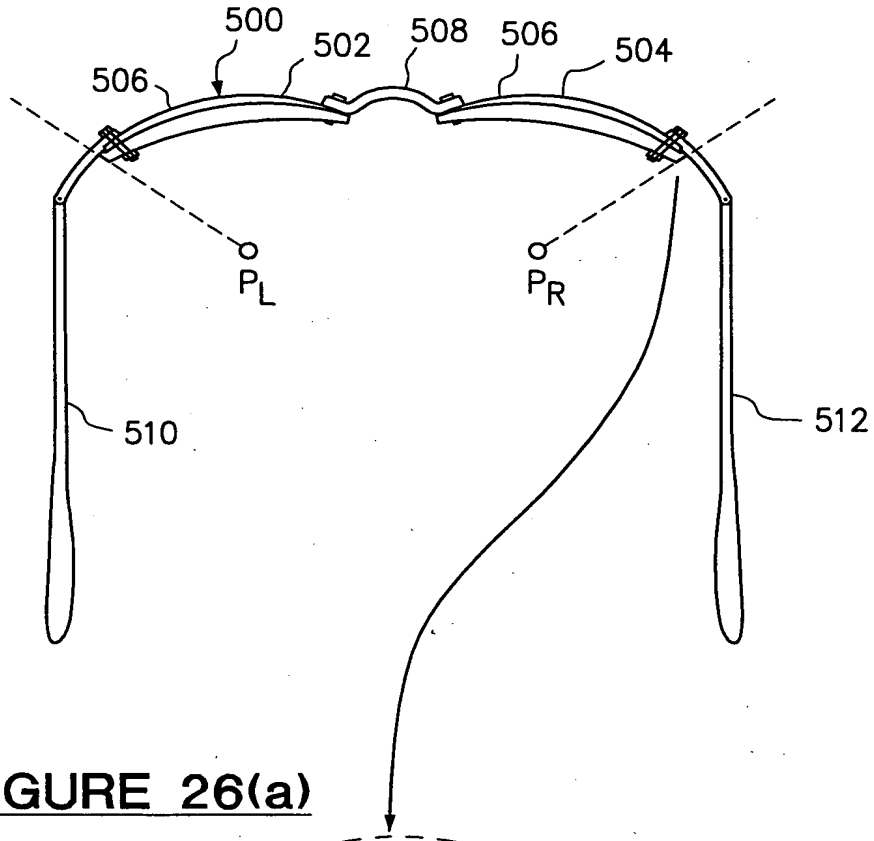



FIGURE 26(a)

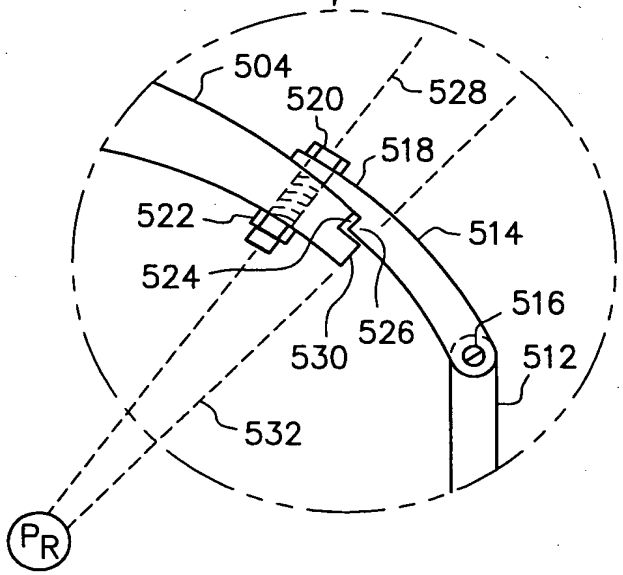


FIGURE 27(a)

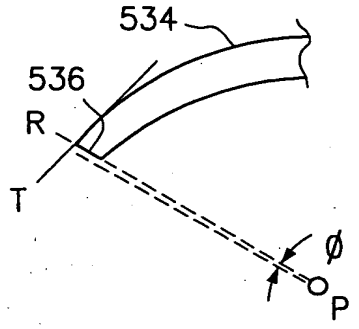



FIGURE 27(b)

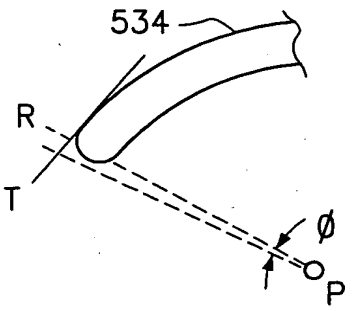



FIGURE 27(c)

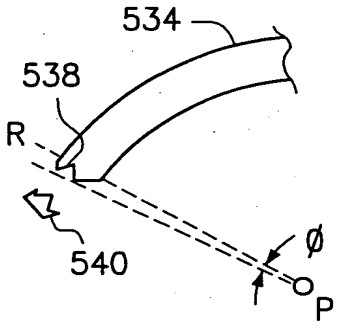



FIGURE 27(d)

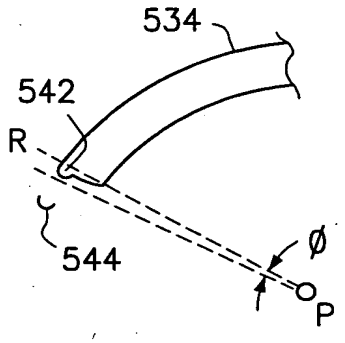



FIGURE 28

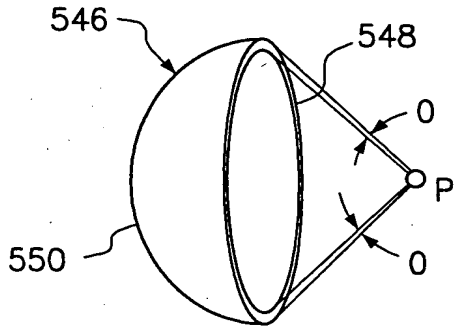


FIGURE 29(a)

PRIOR ART

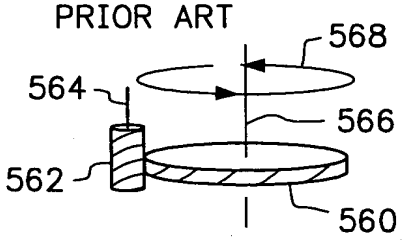



FIGURE 29(b)

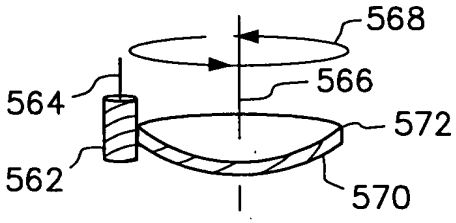



FIGURE 29(c)

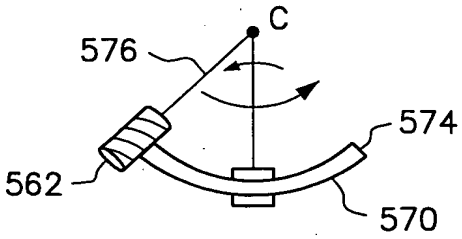
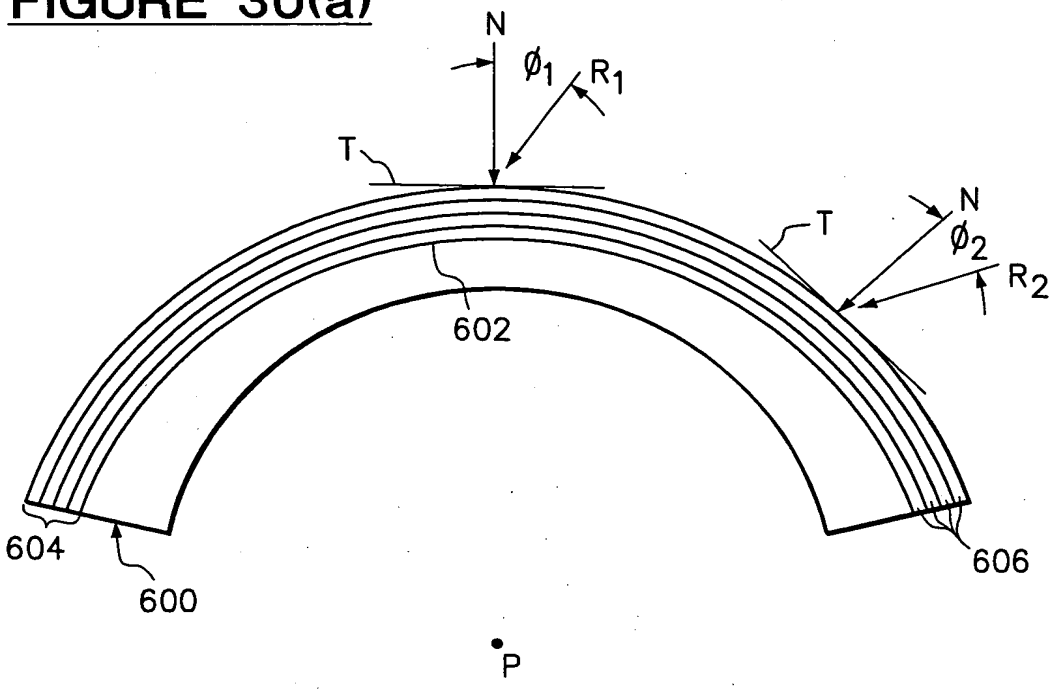



FIGURE 30(a)



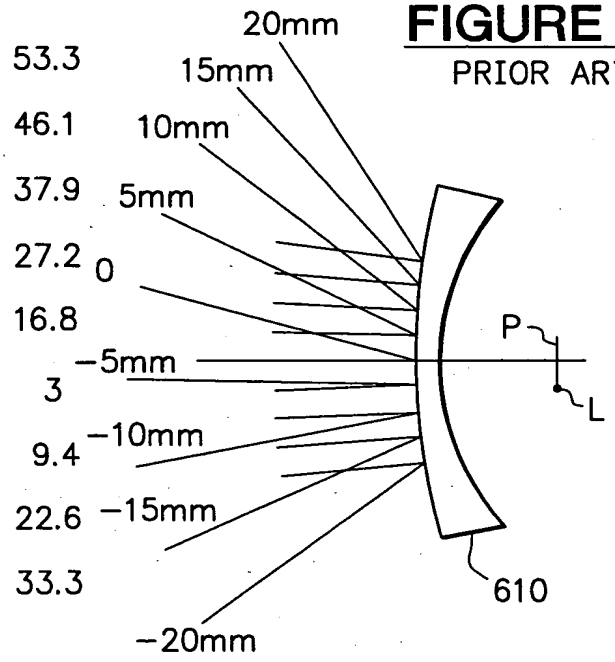



FIGURE 30(b)
PRIOR ART

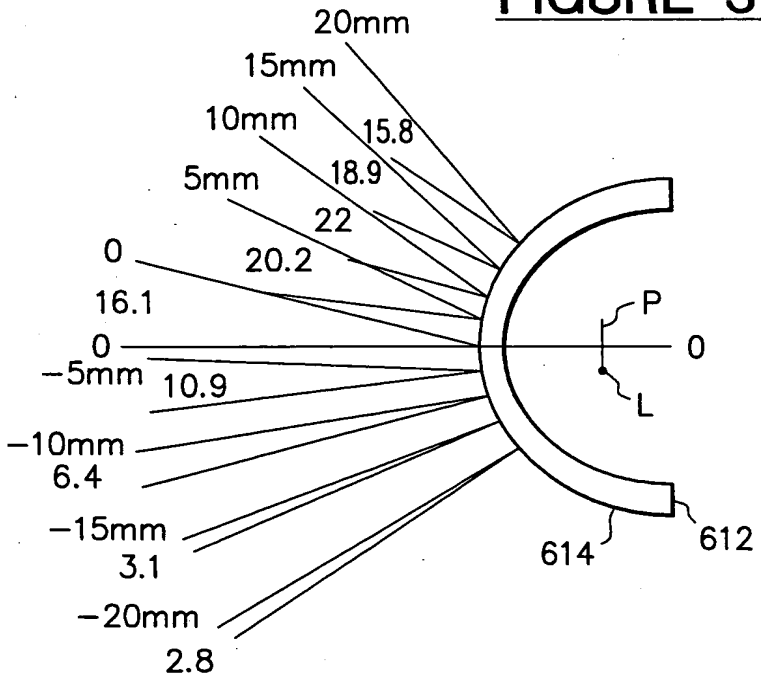
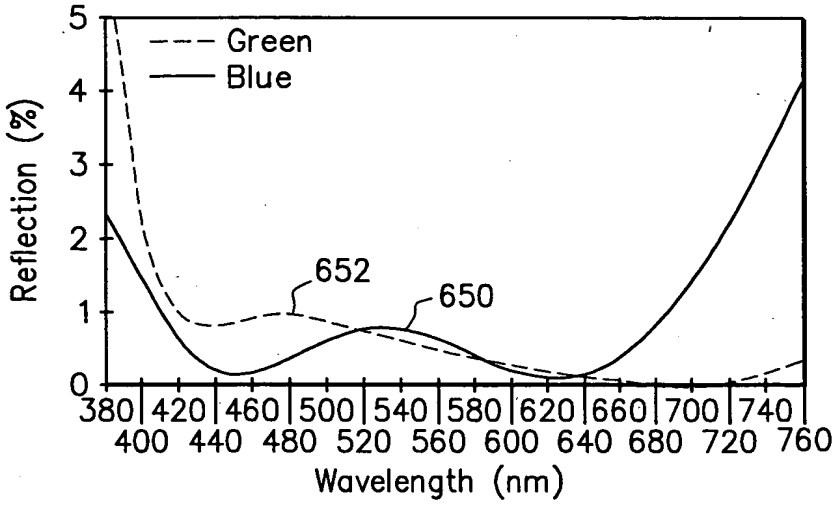
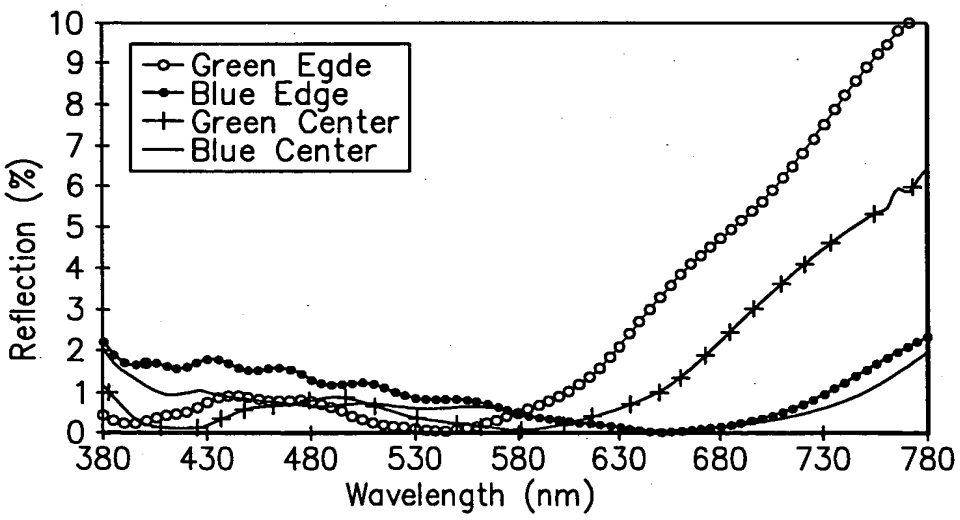



FIGURE 30(c)

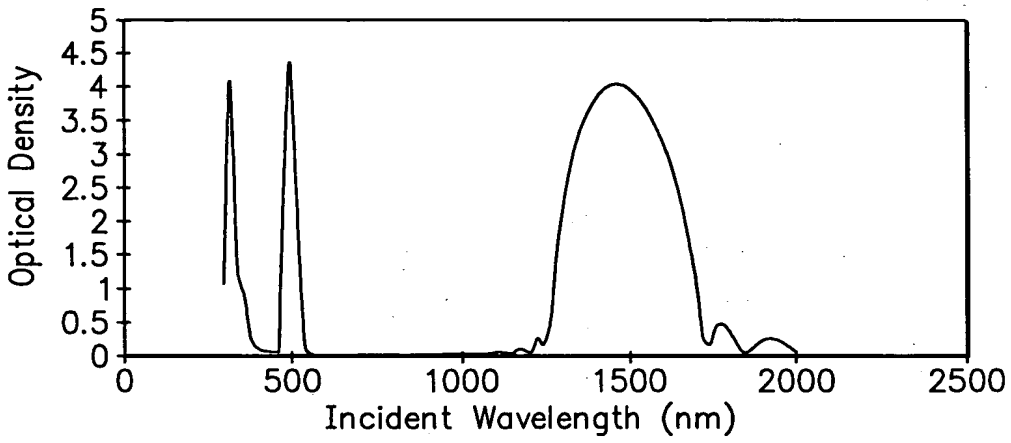
# FIGURE 31




# FIGURE 32



# FIGURE 33




# FIGURE 34